Exhibit 5

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UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

PRESIDIO COMPONENTS, INC., Plaintiff, v. AMERICAN TECHNICAL CERAMICS CORP., Defendant.	Case No. 3:07-cv-00893-IEG-NLS **RULE 4.2 STATEMENT OF DR. JOSEPH P. DOUGHERTY IN SUPPORT OF ATC'S CLAIM CONSTRUCTIONS**
AMERICAN TECHNICAL CERAMICS CORP., Counter-Claimant, v. PRESIDIO COMPONENTS, INC., Counter-Defendant.	

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I, Dr. Joseph P. Dougherty, hereby depose and state the following:

1. My name is Joseph P. Dougherty. I have been retained by the Defendant American Technical Ceramics Corp. ("ATC") as a technical consultant and expert witness in this case. I submit this declaration in support of ATC's Claim Constructions. My declaration is based upon my own personal knowledge and experience.

2. The patent in suit, U.S. Patent No. 6,816,356 ("the '356 Patent") attached as Exhibit A, relates generally to multilayer capacitors, which are formed from multiple layers of conductive and non-conductive (dielectric) materials. I am an expert in this field.

I. QUALIFICATION AND EXPERIENCE

3. My background and qualifications are set forth in my curriculum vitae attached as Exhibit B. As can be seen from my curriculum vitae, I am a retired Associate Professor Emeritus of Electrical Engineering and Materials at Pennsylvania State University, a position I held for more than 15 years. From 1988-1999, I was the Director of the Center for Dielectric Studies at Pennsylvania State University. The Center for Dielectric Studies is the only research facility in the United States designated by the federal government, through the National Science Foundation, as an Industry/University Cooperative Research Center that studies dielectric, e.g., ceramic, structures specifically including multilayer capacitors. The Center's industry members included major multilayer capacitor companies from the United States, Japan, and Europe. A pamphlet regarding the research conducted at the Center for Dielectric Studies is attached as Exhibit C.

4. I am a member of the technical program committee for the Capacitor and Resistor Technology Symposium (CARTS), and I presented the keynote paper for CARTS in Scottsdale, Arizona in 2003. In 2000, 2002, 2004, and 2006, I was Co-Chair of the National Electronic Manufacturing Initiative (NEMI) Roadmaps for Passive Electronic Components Technology Group. (Multilayer capacitors are one type of passive components.) I have also worked as a technical advisor on projects involving multilayer capacitors for companies including Johanson Dielectrics, Medtronics, and Novacap. After completing my Ph.D. degree in 1972, I worked in industry research and development at Philips Research, manufacturing ceramics at Gulton Industries, and consulting

for ceramic component research at DOW Chemical, Ford, GM, Medtronic, Johanson Dielectrics, and many others.

5. I have testified as an expert witness in another patent infringement lawsuit involving methods for manufacturing multilayer ceramic capacitor feedthrough filters. I have also been an expert witness in other cases involving ceramic telephone line protection circuits and bonding methods for quartz tuning forks used for automotive sensors.

II. MATERIALS REVIEWED

6. In preparing this statement, I have reviewed the '356 Patent and its file history. I have also reviewed proposed claim constructions by ATC and Presidio, which are attached as Exhibit D. I have also reviewed reference books, prior art patents identified by ATC in its Responsive Claim Construction, as well as other documents mentioned in this statement.

III. THE RELEVANT ART

7. The '356 patent relates generally to multilayer capacitors, which are formed from multiple layers of conductive and non-conductive materials, such as metal and ceramic, respectively.

8. The asserted claims 1-5, 16, and 18-19 of the '356 Patent purportedly cover a multilayer capacitor having "a substantially monolithic" dielectric body, a capacitor formed by plates disposed within the dielectric body, and a fringe-effect capacitance formed by "contacts" disposed externally on the dielectric body.

IV. LEVEL OF ORDINARY SKILL IN THE RELEVANT ART

9. I am informed by counsel that patent claims should be understood from the perspective of a person of ordinary skill in the relevant art to which the patent relates and based on the understanding of that skilled person at the time the application was filed. The level of skill in the art relevant to this patent is medium. The ordinary artisan, in my opinion, would hold a Masters or similar degree, or the experiential equivalent thereof, in Electrical Engineering or a similar field, and would have at least two years of industry experience in designing multilayer capacitors. I possess a higher level of skill than one of ordinary skill in the art and was at least a person of ordinary skill in the art in 2002 when the application which lead to the '356 Patent was filed.

V. BACKGROUND OF THE RELEVANT TECHNOLOGY

10. Generally, a capacitor is formed whenever two conductors, most commonly metal plates, are spaced apart by non-conductive, i.e., dielectric, materials such as air or ceramic. Since electricity passes easily through the conductors, but not the dielectric, a positive electrical charge accumulates on one plate and a negative charge accumulates on the other plate when a voltage is applied across the capacitor.

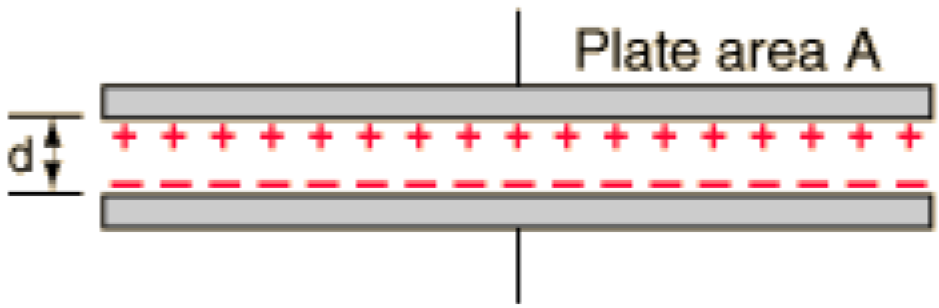
11. Capacitors are passive electronic components with many uses in, for example, cellular phones, video cassette recorders, televisions, general purpose computers, and audio amplifiers. Capacitors can be used to filter out the undesirable "ripples" or "spikes" in the constant voltage of a power supply line where the frequency (f) is zero, thus preventing equipment malfunction. Capacitors can also be used to store and provide charge to transistors on a printed circuit board, also known as "switches," to enable the transistors to switch at high speeds. Transistors switch "on" and "off" to regulate the flow of current and voltage in electrical circuits and are the basic building blocks of virtually all present-day electronics. It is not uncommon for a transistor to switch 20 billion times per second, which corresponds to a frequency of 20 Gigahertz (GHz).

12. There are many different types of capacitors. One type is the multilayer capacitor, which is formed from multiple layers of conductive and non-conductive materials. Multilayer capacitors are "discrete" or "standalone" capacitors that are solderable, glueable, or otherwise attachable to the surface of another circuit. Another type of capacitor is one that is embedded or "integrated" within a substrate or package that also includes other circuit components.

A. <u>Fringe-Effect And Other Capacitances</u>

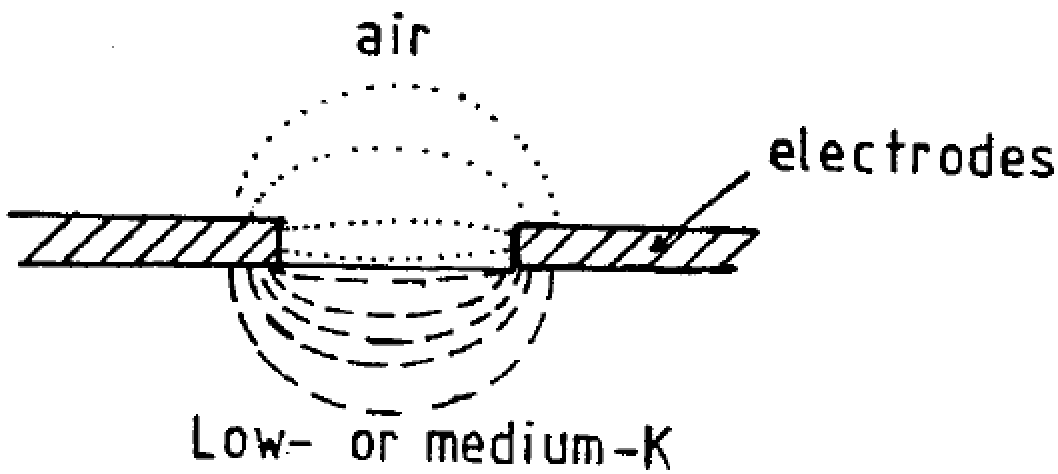
13. The ability of a capacitor to store charge (Q) per unit of voltage (V) applied across its plates is its "capacitance" (C), which is measured in Farads (F). This relationship is expressed by the equation $C = Q/V$. Capacitance depends on the geometry and spacing of the conductive plates and a property of the dielectric material called its dielectric constant (K). Commonly, a dielectric material having a dielectric constant higher than air is used because it increases the capacitance.

14. A "parallel plate capacitor," shown below, is formed by positioning two plates in parallel and separating them by a dielectric. The capacitance (C_P) is approximately $C_P = \varepsilon_o\varepsilon_r A/d$.[1]



For example, multilayer capacitors are typically manufactured in standard sizes or "packages," such as the "0603" package that measures 0.06 by 0.03 inches. The capacitance provided by a typical arrangement of two parallel, conductive plates separated by a layer of dielectric within a 0603 multilayer capacitor is about 370 picoFarads (pF).[2]

15. A "fringe-effect capacitor," shown below,[3] is formed by positioning the ends of two conductors, sometimes called electrodes, in an edge-to-edge relationship.



[1] Here, ε_o is 8.854×10^{-12} F/m which is the permittivity of air, ε_r is the permittivity of the dielectric with $\varepsilon_r/\varepsilon_o$ being the dielectric constant K, A is the area of overlap between the plates, and d is the distance between the plates.

[2] This is for A approximately equal to $(0.9)*(1.524 \times 10^{-3}\text{ m})*(0.762 \times 10^{-3}\text{ m})$ for 90% overlapping electrodes, $d = 25 \times 10^{-6}$ m, and $\varepsilon_r = 1000$ for a typical barium titanate dielectric.

[3] Herbert, J.M., "Ceramic Dielectrics and Capacitors," Gordon and Breach Science Publishers, 1990, pp. 45-47 (Exhibit E).

Fringe-effect capacitance, sometimes called "edge" or "stray" capacitance, is typically less than parallel plate capacitance because, as its name suggests, it is formed primarily by the separation and interaction of the smaller fringe or edge portions of the electrodes.[4] For example, for the same 0603-sized capacitor described above, a typical arrangement of its external electrodes would provide a fringe-effect capacitance of about 4.2 pF.[5] This is roughly 100 times less than the parallel-plate capacitance described above.

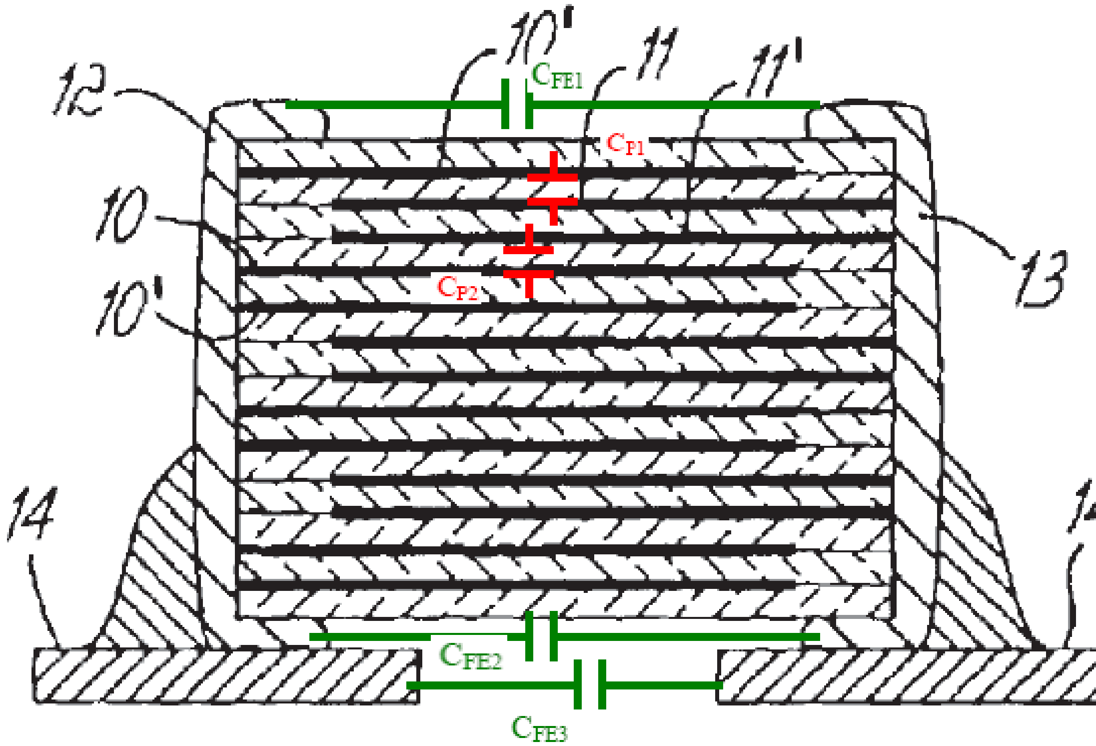
B. <u>Overall Capacitance Of Multilayer Capacitors</u>

16. Frequently, multiple capacitors are connected together to form a capacitive network. Such a capacitive network is formed by the multiple conductive and non-conductive layers of a multilayer capacitor. Typically, the geometry and spacing of these layers forms multiple fringe-effect and parallel-plate capacitors. Each individual capacitor has a capacitance (C), which can be approximated as set forth in paragraphs 14 and 15. Each capacitance has a determinable effect on the overall capacitance (C_{TOTAL}) of the multilayer capacitor.

17. Figure 2A of the '356 Patent is a cross-sectional view of a typical multilayer capacitor. Figure 2A is reproduced below with annotations that identify certain, individual capacitors within the capacitive network.

[4] Fringe-effect capacitance (C_{FE}) according to a first order of approximation is $C_{FE} = \pi\varepsilon_r'\varepsilon_o l/\ln[(\pi(d-w)/(w+t) + 1)]$, where ε_o is the permittivity of air, ε_r' is one half of the permittivity of the dielectric ($\varepsilon_r/2$) with $\varepsilon_r/\varepsilon_o$ being the dielectric constant (K), w is the width and t is the thickness of each electrode, and d is the distance between the electrodes. Charles S. Walker, "Capacitance, Inductance, and Crosstalk Analysis," Artech House, 1990, pp. 51-52 (Exhibit F).

[5] This is for $l = 0.762 \times 10^{-3}$ m, $w = 2 \times 10^{-4}$ m, $t = 1 \times 10^{-4}$ m, $d = 1.3 \times 10^{-3}$ m, and $\varepsilon_r = 1000$ for a typical barium titanate dielectric.



PRIOR ART

FIG. 2A

This multilayer capacitor includes layers (10, 10', 11, 11') of conductive material, sometimes called internal plates or electrodes, that are separated by layers of dielectric material. Approximately half of the internal plates extend toward and touch the layer of conductive material that is positioned on the left-hand side (12), which is also called a "contact." The other half of the internal plates extend toward and touch the layer of conductive material on the right-hand side (13). Here, the multilayer capacitor is connected by solder to conductive traces (14) of a surface mount circuit board.

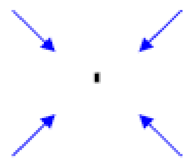
18. As can be seen from the added annotations to Figure 2A, the multiple layers of this multilayer capacitor form a network of parallel-plate and fringe-effect capacitors. For example, four such capacitors, having capacitances C_{FE1}, C_{FE2}, C_{P1}, and C_{P2} (annotations added), are identified in the drawing. C_{FE1} is the fringe-effect capacitance formed by the edge-to-edge positioning of the ends of the contacts (12, 13) along the top of the device. C_{FE2} is the fringe-effect capacitance formed by the edge-to-edge positioning of the ends of the contacts (12, 13) along the bottom of the device.

C_{P1} is the parallel plate capacitance formed by the parallel positioning of internal plates (10', 11). C_{P2} is the parallel plate capacitance formed by the parallel positioning of internal plates (11', 10). Another fringe-effect capacitance, C_{FE3} (annotation added), is formed by the edge-to-edge positioning of the ends of conductive traces (14) on the printed circuit board. Once the multilayer capacitor is mounted on the conductive traces, C_{FE3} adds to the total capacitance. Since all of these capacitors are connected "in parallel," the total capacitance of this network is the sum of the individual capacitance values (i.e., $C_{TOTAL} = C_{FE1}+C_{P1}+C_{P2}+\ldots+C_{FE2}+C_{FE3}$).

C. Performance of Multilayer Capacitors

19. It is very difficult to determine the effect, if any, that each capacitor in the multilayer capacitor network will have on the frequency response of the multilayer capacitor. In isolation, the frequency response of a capacitor depends on its "reactance" ($X_C = 1/\pi fC$), which represents the extent to which the capacitor will resist the passage of a signal of frequency (f) across its plates thereby allowing certain frequencies to pass through it and blocking other frequencies. However, the way a capacitor theoretically or in isolation will respond to frequency can vary significantly from its actual frequency response when it is connected to a network of capacitors. When the capacitor is connected within a capacitive network, such as a multilayer capacitor, its response also depends on other factors including the reactances of all the other capacitors in the network (including the reactance of the circuit board) and their relative positions with respect to the circuit board.

20. It also becomes increasingly difficult to determine the effect, if any, of each capacitor on the frequency response of the multilayer capacitor as the number of conductive and non-conductive layers (and thus the number of individual capacitors) increases and/or as their configuration becomes more complex. It is not uncommon for a multilayer capacitor to have 300 or more layers within a casing that is smaller than the tip of a pencil.



Approximate size of a "0603" multilayer capacitor,
which measures 0.06 x 0.03 inches

21. Additionally, there is no accepted method for determining the effect in terms of frequency response of each individual capacitor within a multilayer capacitive network, and such effects generally cannot be reliably determined. The only frequency response that can be determined reliably is the frequency response of the multilayer capacitor as a whole once it has been built.

22. As a result, it is industry practice not to estimate or report the frequency response of the individual capacitors within a multilayer capacitor network. Rather, only data characterizing the frequency response of the multilayer capacitor as a whole is measured and reported, including "S-parameter data" such as insertion loss and return loss.

D. <u>Additional Examples From The '356 Patent</u>

23. Figure 9A of the '356 Patent, reproduced below with annotations, shows another, more complex example of a multilayer capacitor. It includes capacitors with capacitances C_{FE1}, C_{FE2}, C_{P1}, and C_{P2} that are the same or similar to the corresponding capacitances identified in paragraphs 17 and 18 regarding the multilayer capacitor of Figure 2A. This multilayer capacitor

also includes capacitors C_{P3}, C_{P4}, C_{FE3}, and C_{FE4}, which result from certain differences in the configuration of the conductive and non-conductive layers.

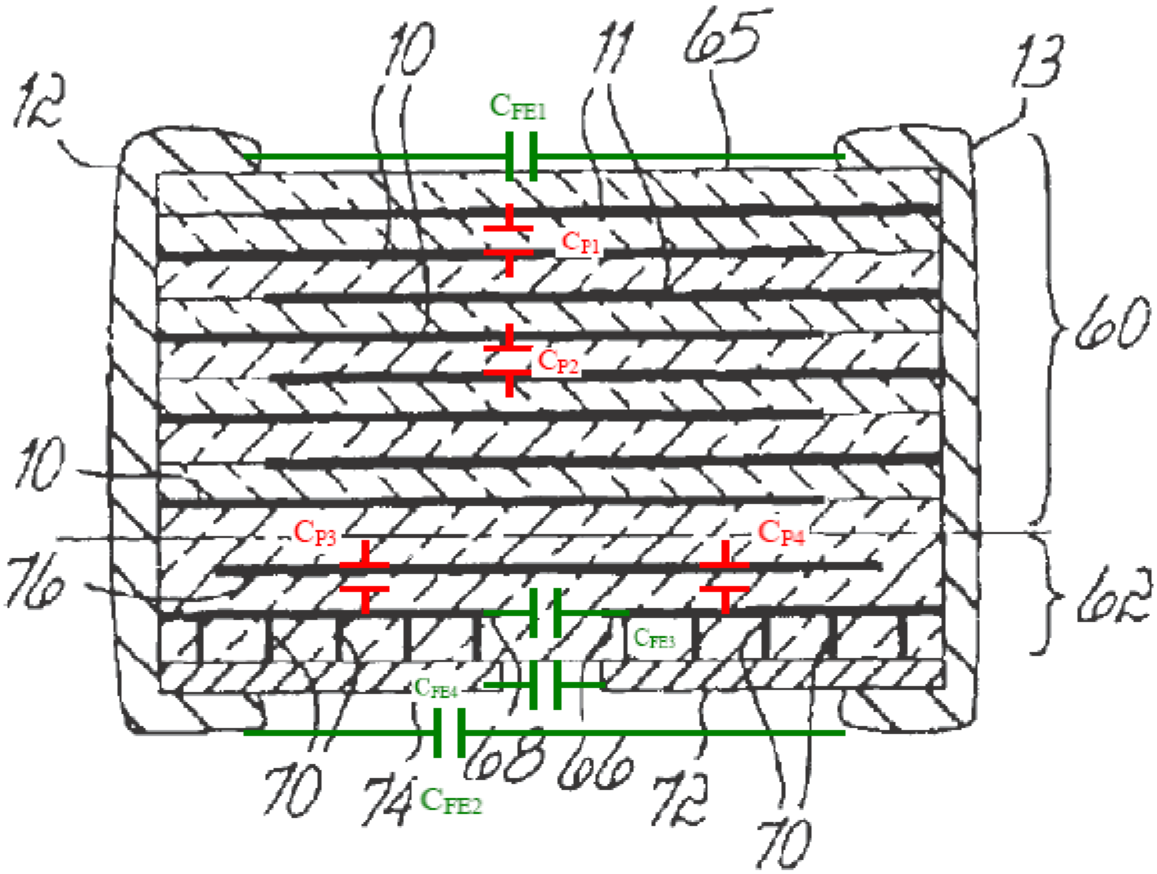


FIG. 9A

C_{FE3} is the fringe-effect capacitance formed by the edge-to-edge positioning of internal conductive layers (66, 68). C_{FE4} is the fringe-effect capacitance formed by the edge-to-edge positioning of conductive layers (72, 74), which are also called external plates. C_{P3} is the parallel plate capacitance formed by positioning internal plate (68) parallel to an overlapping portion of the internal plate (76), which is also called a floating plate because it is surrounded completely by dielectric material and does not physically touch either of contacts (12, 13). C_{P4} is the parallel plate capacitance formed by positioning internal plate (66) parallel to another overlapping portion of the floating plate (76). The capacitors with capacitances C_{P3} and C_{P4} are connected "in series," which means that their collective, additive effect to the overall capacitance is determined as $(C_{P3}C_{P4})/(C_{P3}+C_{P4})$.

24. Figure 10A of the '356 Patent, reproduced below with annotations, shows another multilayer capacitor that includes capacitors with capacitances C_{FE1}, C_{FE2}, C_{FE3}, C_{FE4}, C_{P1}, C_{P2}, C_{P3} and C_{P4} that are the same or similar to the corresponding capacitances identified in paragraph 23 regarding the multilayer capacitor of Figure 9A.

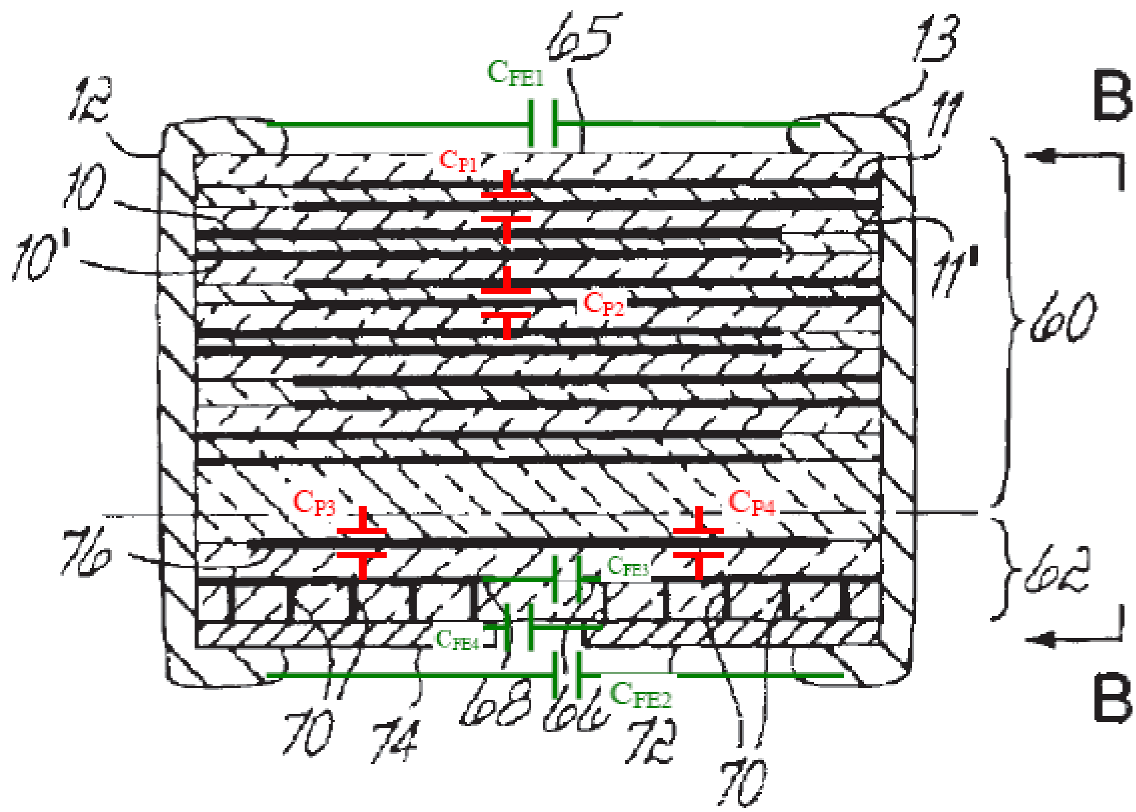


FIG. 10A

25. Figure 18A of the '356 Patent, reproduced below with annotations, shows another configuration of a multilayer capacitor.

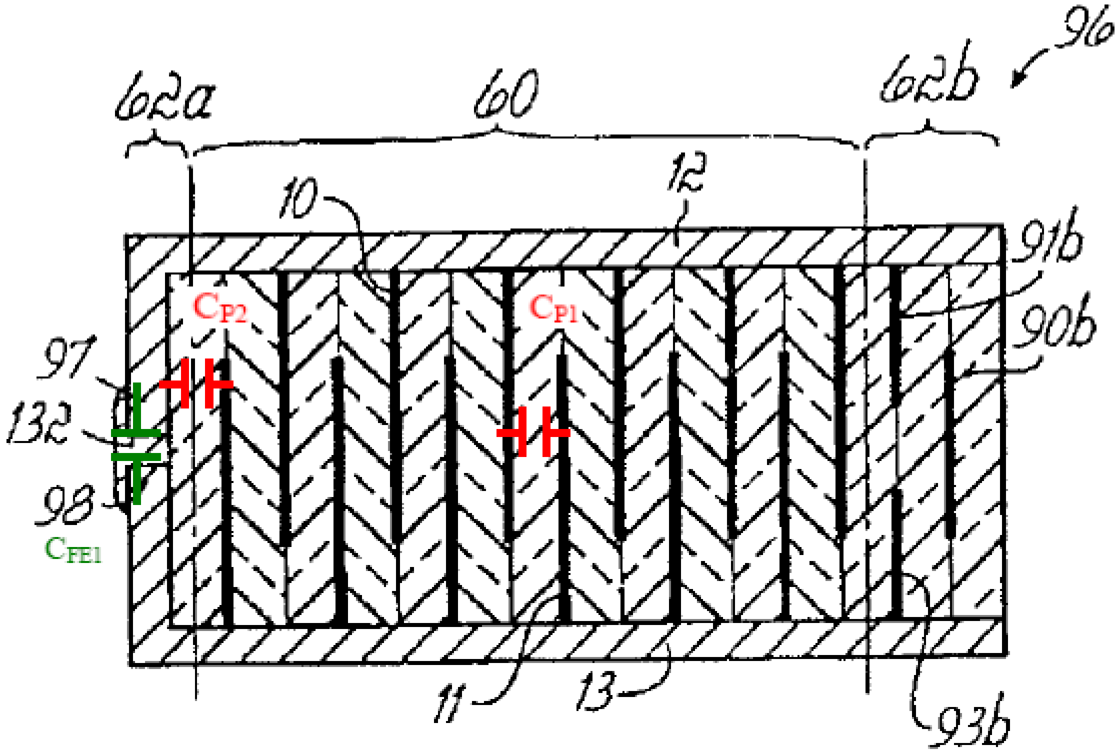


FIG. 18A

C_{FE1} is the fringe-effect capacitance formed by the edge-to-edge positioning of ends (97, 98) of contacts (12, 13). C_{P1} is the parallel plate capacitance formed by positioning an internal plate (10) parallel to an overlapping portion of an internal plate (11). C_{P2} is the parallel plate capacitance formed by positioning contact (12) parallel to an overlapping portion of another internal plate (11).

26. Figure 19A of the '356 Patent, reproduced below with annotations, shows yet another configuration of a multilayer capacitor. It includes capacitances C_{FE1} and C_{P1} that are the same or similar to the corresponding capacitances identified in paragraph 25 regarding the multilayer capacitor of Figure 18A. C_{FE2} is the fringe-effect capacitance formed by the edge-to-edge positioning of ends (117, 118) of contacts (12, 13).

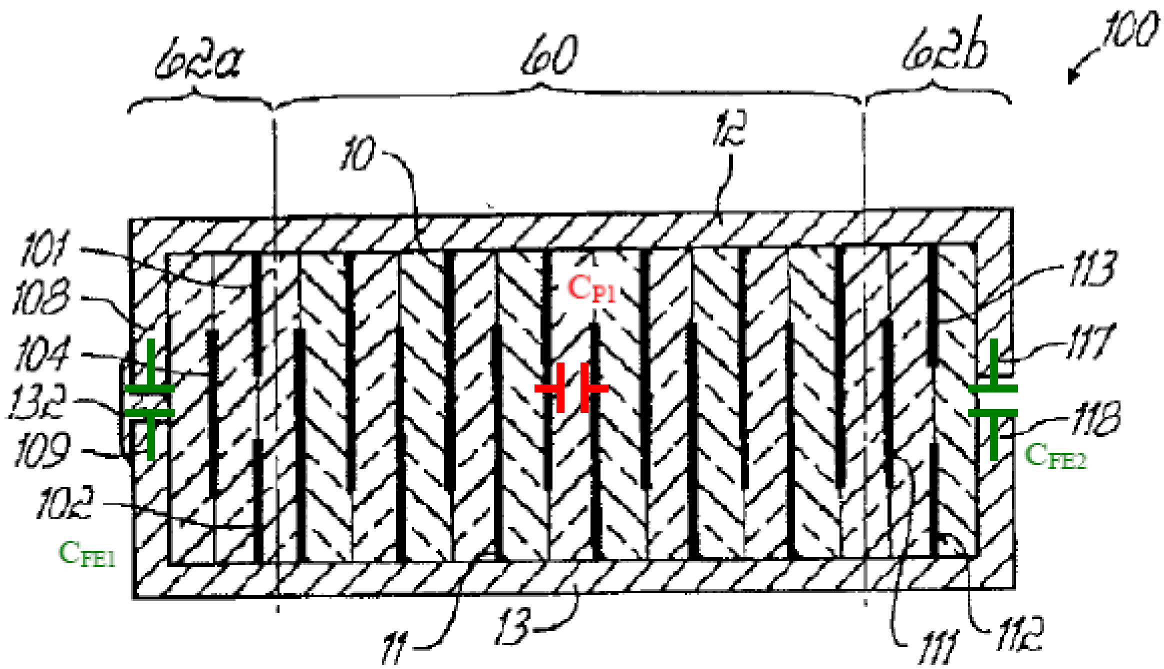
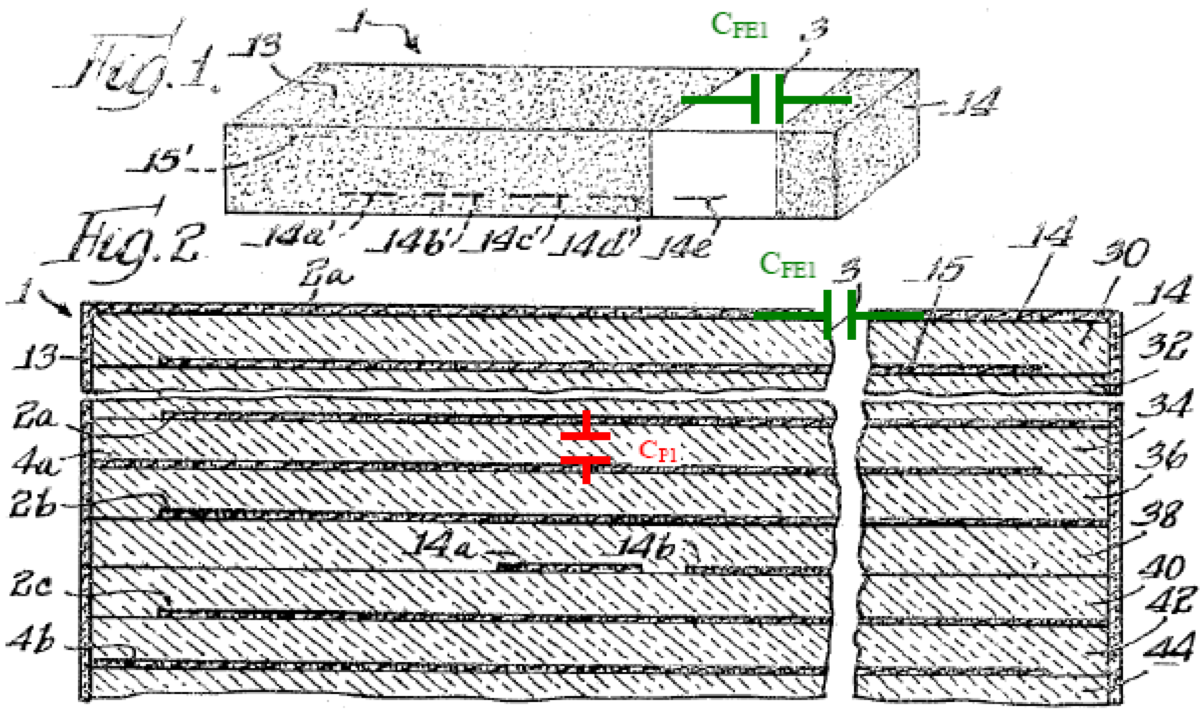


FIG. 19A

E. Prior Art Multilayer Capacitors Are Monolithic

27. Generally, a multilayer capacitor is monolithic when it is formed from multiple conductive and dielectric layers that are compressed and sintered to form a solid block.[6] When a capacitor is formed this way it is monolithic -- there are no degrees of "monolithicness."

28. Figures 1 and 2 of U.S. Patent No. 3,586,933, which issued June 22, 1971 to Bonini (Exhibit H), are reproduced below with annotations. These figures show an example of a multilayer capacitor that is monolithic.



The Bonini patent states that "[r]eferring now to FIGS. 1, 2 … there is seen a monolithic ceramic capacitor 1" (2:52-54). It also states that "[t]he ceramic body 3 most advantageously comprises a plurality of sintered together ceramic layers of a suitable dielectric-forming material such as barium titanate" (3:22-27). C_{FE1} is the fringe-effect capacitance formed by the edge-to-edge positioning of the ends of terminal-forming coatings (13, 14) along the top of the capacitor. This capacitor also includes another fringe-effect capacitance C_{FE2} (not shown) formed by the edge-to-edge positioning of the ends of terminal-forming coatings (13, 14) along the bottom of the

[6] *See* McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1993, p. 1294 ("monolithic ceramic capacitor …A capacitor that consists of thin dielectric layers interleaved with staggered metal-film electrodes; after leads are connected to alternate projecting ends of

capacitor. C_{P1} is the parallel plate capacitance formed by positioning internal plate (2a) parallel to an overlapping portion of the internal plate (4a).

29. Figures 2, 3a, and 3b of Laville (French Publication No. 2 622 346) (Exhibit I), which published April 28, 1989, are reproduced below with annotations. This is another example of a monolithic multilayer capacitor.

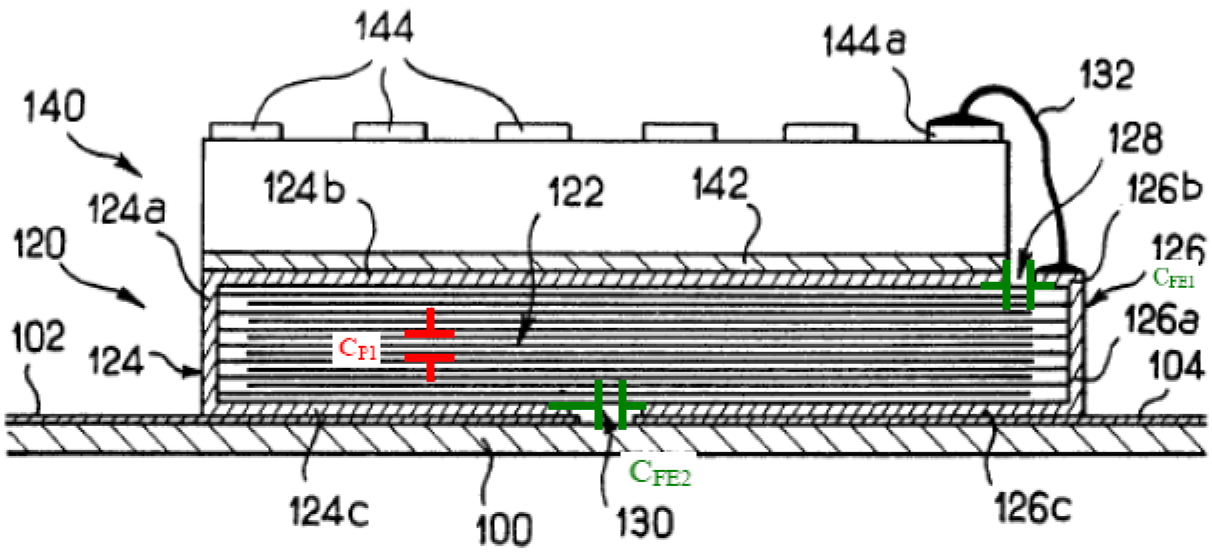
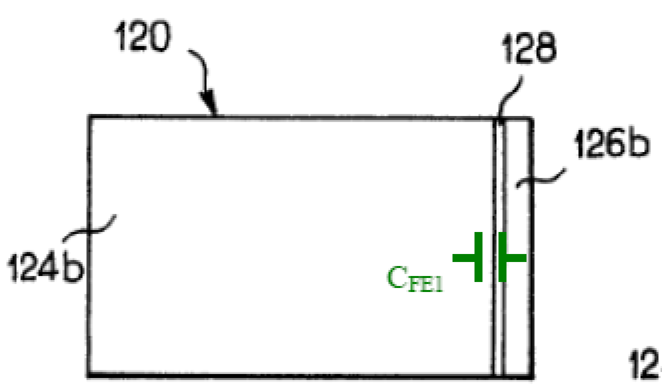


FIG. 2



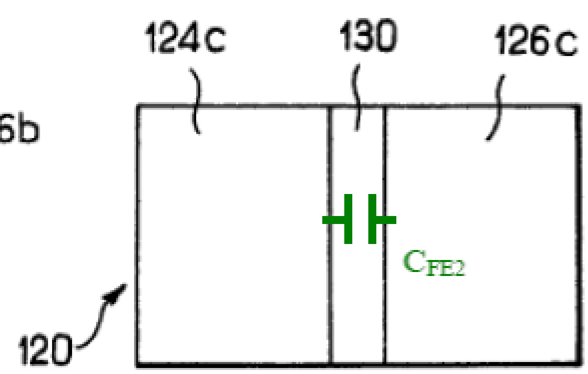


FIG. 3a

FIG. 3b

The Laville publication states that "the capacitor 120 … contains … a monolithic structure made up of alternating ceramic sheets and conductor sheets or electrodes, globally designated by the reference 122" (3:16-19). C_{FE1} is the fringe-effect capacitance formed by the edge-to-edge

the electrodes, the assembly is compressed and sintered to form a solid monolithic block.") (Exhibit G).

positioning of the ends of terminals (124b, 126b) along the top of the device. C_{FE2} is the fringe-effect capacitance formed by the edge-to-edge positioning of the ends of terminals (124c, 126c) along the bottom of the device. This structure also includes another fringe-effect capacitance C_{FE3} (not shown) formed by the edge-to-edge positioning of the ends of conductive areas (102, 104) formed on substrate (100). C_{P1} represents the parallel plate capacitance formed by positioning one of the internal plates connected to terminal 124 in parallel to an overlapping portion of an internal plate that is connected to terminal 126.

30. Figure 3 of U.S. Patent No. 3,274,468, which issued September 20, 1966 to Rodriguez (Exhibit J), is reproduced below with annotations. This shows another example of a monolithic multilayer capacitor of the prior art.

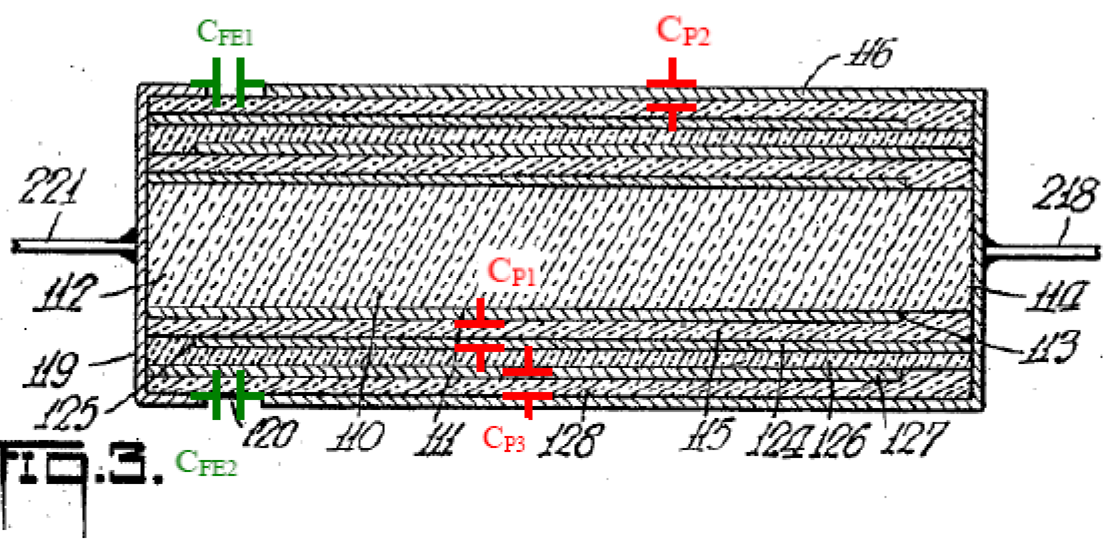


FIG. 3.

The Rodriquez patent states that “[a]fter the capacitor has been completed … it is fired … the core and the various dielectric films being vitrified in one operation” (4:71-75). C_{FE1} is the fringe-effect capacitance formed by the edge-to-edge positioning of the ends of electrode (116) and cap (119) along the top of the device. C_{FE2} is the fringe-effect capacitance formed by the edge-to-edge positioning of the ends of electrode (116) and cap (119) along the bottom of the device. C_{P1} is the parallel plate capacitance formed by positioning internal electrode (111) parallel to an overlapping portion of the internal electrode (124). C_{P2} is the parallel plate capacitance formed by positioning a top portion of external electrode (116) parallel to an overlapping portion of an internal

electrode. C_{P3} is the parallel plate capacitance formed by positioning a bottom portion of external electrode (116) parallel to an overlapping portion of the internal electrode (127).

31. Figure 12 of U.S. Patent No. 6,483,692, which issued November 19, 2002 to Figueroa (Exhibit K), is reproduced below with annotations and shows another example of a monolithic multilayer capacitor of the prior art.

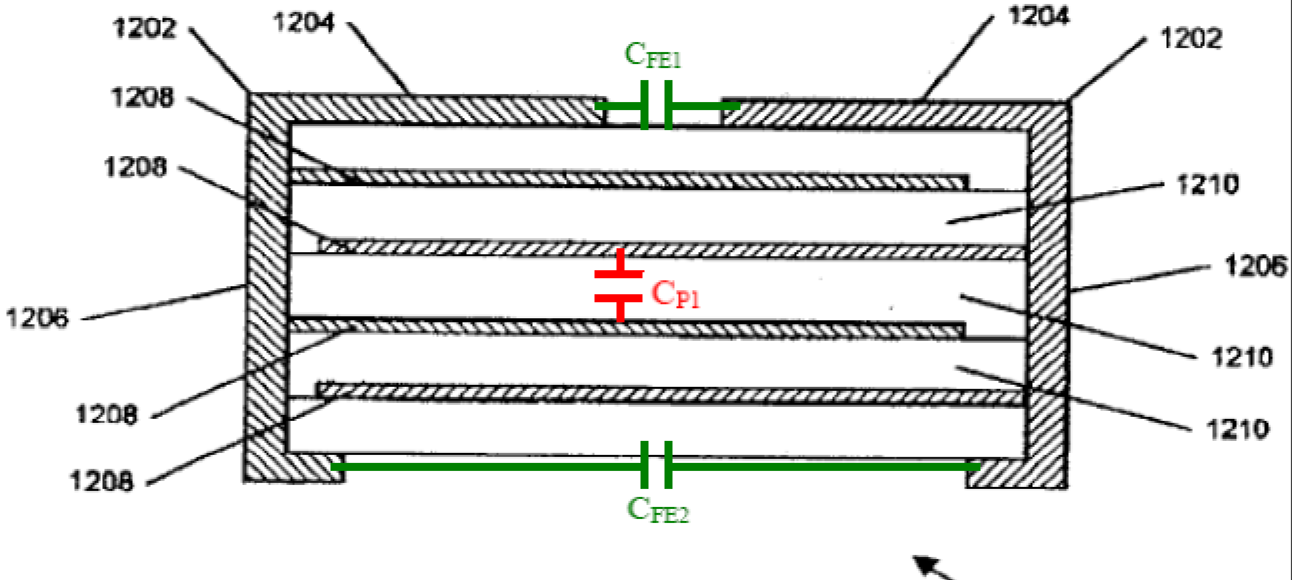


FIG. 12

The Figueroa patent states that "[t]he screen printed layers … are then stacked, pressed, and cofired using fabrication techniques known to those skilled in the art" (10:53-55). C_{FE1} is the fringe-effect capacitance formed by the edge-to-edge positioning of the ends of first and second contacts (1202) along the top of the device. C_{FE2} is the fringe-effect capacitance formed by the edge-to-edge positioning of the ends of first and second contacts (1202) along the bottom of the device. C_{P1} is the parallel plate capacitance formed by positioning an internal electrode (1208) parallel to an overlapping portion of another internal electrode (1208).

VI. CONSTRUCTION OF THE CLAIM LIMITATIONS AT ISSUE

32. I am informed that ATC and Presidio propose their respective constructions (and positions on indefiniteness) for certain claim elements from 4 claims of the '356 Patent: 1, 3, and 18-19. I am submitting my statement regarding the proper constructions of those elements, and I reserve the right to supplement, modify, or revise my constructions. As support for my constructions, in addition to intrinsic evidence and my own personal knowledge and experience, I may rely on extrinsic sources such as treatises, dictionaries, publications, patents, etc. The quotations from the specification of the '356 Patent listed in this document, which are exemplary only and not exhaustive, may apply to construction of more than one claim term and I may rely on all of them in this manner. I may rely on the prosecution history of the '356 Patent, its parent patent, and/or any patent or application that claims priority to the '356 Patent or its parent patent.

A. CLAIM 1

33. Claim 1 of the '356 Patent claims:

1. A capacitor comprising:

a substantially monolithic dielectric body;

a conductive first plate disposed within the dielectric body;

a conductive second plate disposed within the dielectric body and forming a capacitor with the first plate;

a conductive first contact disposed externally on the dielectric body and electrically connected to the first plate; and

a conductive second contact disposed externally on the dielectric body and electrically connected to the second plate, and the second contact being located sufficiently close to the first contact to form a first fringe-effect capacitance with the first contact.

The following is my opinion as to the proper construction of the elements from claim 1:

1. "A Substantially Monolithic Dielectric Body"

a. Indefiniteness

34. It is my opinion that **"a substantially monolithic dielectric body"** is incapable of construction because it is indefinite. I am informed by counsel that Title 35, Section 112(2) of the

United States Code requires that the "specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." I am informed that failure to comply with this requirement of the patent law renders the claims invalid.[7]

35. Accordingly, in view of this information, it is my opinion that **"a substantially monolithic dielectric body"** is wholly indefinite because the specification does not teach one of ordinary skill in the art, nor does it form part of his or her general knowledge, how to determine whether a particular dielectric body is "substantially monolithic." In fact, the specification merely mentions the phrase "substantially monolithic" without explanation. Moreover, the specification does not explain the difference between a substantially monolithic and non-monolithic dielectric body. It also does not teach what difference exists, if any, between a monolithic dielectric body and a dielectric body that is substantially monolithic. Moreover, Presidio's U.S. Patent No. 6,587,327, which is the parent patent of the '356 Patent, does not event mention the concept of "a substantially monolithic dielectric body."

36. As described above in paragraph 27, the term "monolithic" as it is generally understood in this art refers to a characteristic of the <u>entire</u> multilayer capacitor structure, not just the dielectric portion as within claim 1. Specifically, the multilayer capacitor is said to be monolithic when it is formed from multiple <u>conductive</u> and <u>dielectric</u> layers that are compressed and sintered to form a solid block. If the capacitor is formed in this way, it is a monolithic capacitor. There are no degrees of "monolithicness." Against this backdrop, it is entirely unclear what is required by "a substantially monolithic dielectric body."

37. The fact that Presidio deemed it to be necessary to describe extensively the meaning of "essentially monolithic" in its U.S. Patent No. 6,661,639 (which belongs to a different patent

[7] It is also my opinion that the claims are invalid because "a substantially monolithic dielectric body" is not sufficiently described or enabled by the specification of the '356 Patent. I am informed by counsel that Title 35, Section 112(1) of the United States Code requires the specification of a patent to "contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which is most nearly connected, to make and use the same, and to set forth the best mode contemplated by the inventor of carrying out his invention." It is my opinion that the '356 Patent does not meet this requirement.

family) and did not leave it to a guess of a skilled artisan, but failed to provide a corresponding description of "a substantially monolithic dielectric body" in the '356 Patent specification, also supports my opinion that this phrase renders the claims invalid as being indefinite.[8] Notably, since the description in Presidio's U.S. Patent No. 6,661,639 did not publish until that patent issued on December 9, 2003, one of ordinary skill in the art would not have had access to it as of the April 14, 2003, the filing date of the application that matured into the '356 Patent.

b. ATC's Alternative Construction

38. In the alternative, if the Court decides that construction of **"a substantially monolithic dielectric body"** is appropriate, it is my opinion that this element should be construed to mean a dielectric body largely but not wholly without seams from the inclusion of conductive plates within the dielectric body. My construction is consistent with the specification of the '356 Patent which provides:

> A monolithic capacitor structure includes opposed and overlapping plates within a dielectric body, which are arranged to form a lower frequency, higher value capacitor. (Abstract)
>
> The present invention relates to miniature monolithic capacitors. (1:9-10)
>
> The development of integrated circuits has made it possible to place many circuit elements in a single semiconductor chip. Where part or all of the circuit is an analog circuit, such as a radio frequency transmitter or receiver, audio amplifier,

---

[8] The extensive description of the phrase "essentially monolithic" that is provided in Presidio's own U.S. Patent No. 6,661,639, issued December 9, 2003 (Exhibit L) in a different patent family, states:

> The resulting capacitor is a plated, essentially monolithic structure, meaning that it is an essentially solid structure of materials that are sintered together, thereby eliminating boundaries/joints within the structure and the structure contains no epoxy, glue, solder or other attachment means between layers. To state another way, monolithic is generally understood to refer to an object comprised entirely of one single piece (although polycrystalline or even heterogeneous) without joints or seams as opposed to being built up of preformed units. In the present invention, the only assembly occurs in the green state, and the individual capacitors obtained are sintered, monolithic or essentially monolithic structures. By "essentially" we refer to the presence of the internal metallizations that create a partial boundary or seam within the structure, but because the metallizations do not cover the entire area of the dielectric layer, the ceramic materials sinter together around the edges of the metallizations to essentially form a monolithic structure. Thus, by monolithic, we refer to the absence of a complete or continuous boundary or seam within the specified structure, with no boundary at all being completely monolithic and a partial boundary being essentially monolithic. The capacitors of the present invention are relatively easy to manufacture due to assembly occurring before dicing and firing the chips, which further allows for easy and accurate alignment of the components. (4:64 to 5:23)

> or other such circuit, circuit design requires lumped elements that cannot be readily realized in monolithic integrated circuits. Capacitors in particular are frequently created as separate elements from the integrated circuit. The electronic device thus typically includes monolithic integrated circuits combined with external capacitors. (1:13-22)
>
> For such applications, monolithic ceramic capacitors have been used. For example, single capacitors made of ceramic materials, are known in the art. These are relatively small in size and can be surface mounted to a surface mount circuit board, or glued and wire bonded to a substrate in a hybrid circuit layout. (1:23-29)
>
> Various monolithic ceramic structures have been developed to provide relatively small capacitors for highly integrated applications. A first such structure, shown in FIG. 2A, is known as a "multilayer ceramic capacitor". This structure is formed by stacking sheets of green tape or greenware, i.e., thin layers of a powdered ceramic dielectric material held together by a binder that is typically organic. Such sheets, typically, although not necessarily, of the order of five inches by five inches, can be stacked with additional layers, thirty to one hundred or so layers thick. After each layer is stacked, conductive structures are printed on top of the layer, to form internal plates that form the desired capacitance. When all layers are stacked, they are compressed and diced into capacitors. (1:63 to 2:9)
>
> The capacitor of the present invention is an integrated array of capacitors connected in series and/or parallel circuits in a substantially monolithic dielectric body. (4:29-31)
>
> In accordance with principles of the present invention, a monolithic capacitor includes both a multi-layer, lower frequency, higher valued capacitor and a higher frequency, lower valued capacitor. (4:41-44)
>
> In the disclosed embodiments, the capacitor has a substantially monolithic dielectric body formed from a plurality of ceramic tape layers laminated together in a green ceramic state and fired to form a sintered or fused monolithic ceramic structure. However, other dielectric materials and assembly methods may be used. (4:61-66)

39. I am also informed by counsel that the Court of Appeals for the Federal Circuit has said that "ordinarily ... 'substantially' means 'largely but not wholly that which is specified.'" *Ecolab, Inc. v. Envirochem, Inc.,* 264 F.3d 1358, 1366 (Fed. Cir. 2001) (citing *York Prods., Inc. v. Cent. Tractor Farm & Family Cent.,* 99 F.3d 1568, 1573 (Fed. Cir. 1996)). My construction is consistent with this ordinarily-adopted construction of this term.

c. Presidio's Construction

40. Presidio has proposed that the phrase **"a substantially monolithic dielectric body"** be construed as "a largely, but not necessarily wholly, one-piece dielectric body." Presidio has

provided non-technical dictionary definitions of the terms "substantially" and "monolithic." I disagree with Presidio's proposed construction of this phrase because it is indefinite under 35 U.S.C. § 112(2) and invalid under 35 U.S.C. § 112(1), contrary to the specification of the '356 Patent, and contrary to the understanding of one of ordinary skill in the art. The specification of the '356 Patent does not teach one of ordinary skill in the art how to determine whether a particular dielectric structure is a largely, but not necessarily wholly, one-piece dielectric body (e.g., What characteristic(s) of the dielectric structure must be considered?). For example, it is unclear whether Presidio's proposed construction would cover the two-piece capacitor structure shown in Figure 8A of the '356 Patent (labeled "PRIOR ART"), in which one dielectric structure is stacked above and soldered or bonded to another dielectric structure (*see also* Figure 8B of the '356 Patent). I am also informed by counsel that the courts should only use dictionary definitions if they will "assist the court in determining the meaning of particular technology to those of skill in the art." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1318 (Fed. Cir. 2005). Here, since Presidio's construction of the term "monolithic" is contrary to the understanding of one or ordinary skill in the art (*see* paragraph 27), it is my opinion that very little weight, if any, should be given to the non-technical dictionary definition of "monolithic" upon which Presidio relies.

2. "A Conductive First Plate …"

41. It is my opinion that **"a conductive first plate disposed within the dielectric body"** should be construed according to its plain and ordinary meaning to one of ordinary skill in the art. In other words, no construction of this element is necessary *per se*. However, where it is recited as part of another claim element, i.e., "a conductive first contact … electrically connected to the first plate," it is my opinion that construction of the resulting element is appropriate according to my construction set forth below.

Presidio has not proposed a construction for this phrase.

3. "A Conductive Second Plate …"

42. It is my opinion that **"a conductive second plate disposed within the dielectric body"** should be construed according to its plain and ordinary meaning to one of ordinary skill in the art. In other words, no construction of this element is necessary *per se*. However, where it is

recited as part of another claim element, i.e., "a conductive second contact … electrically connected to the second plate," it is my opinion that construction of the resulting element is appropriate according to my construction set forth below.

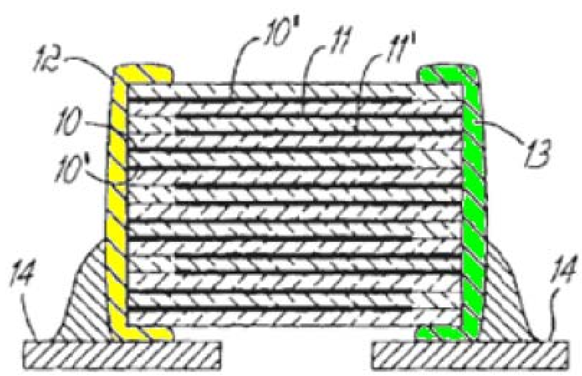
Presidio has not proposed a construction for this phrase.

4. "A Conductive First Contact …"

a. ATC's Construction

43. It is my opinion that **"a conductive first contact disposed externally on the dielectric body and electrically connected to the first plate"** should be construed to mean a conductive layer for attaching the capacitor (recited in the preamble of claim 1) to an external conductor, the conductive layer being present on an external surface portion of the substantially monolithic dielectric body and touching the conductive first plate to establish electrical connection. In other words, my construction requires the <u>same conductive layer</u> to have three characteristics: (i) it must be physically and electrically attachable to an external conductor such as a printed circuit board; (ii) it must touch the dielectric body; and (iii) it must touch the internal plate to establish an electrical connection.

44. Throughout the specification and figures of the '356 Patent, a "contact" (12, 13) always consists of a <u>single conductive layer</u> having <u>all three</u> of these characteristics. *See*, for example, Figures 2A, 18A, and 19A of the '356 Patent which are reproduced below to highlight the "contacts," which are shown in cross-section.



PRIOR ART
FIG. 2A

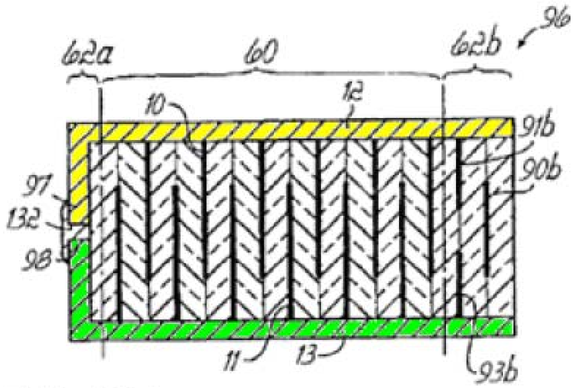


FIG. 18A

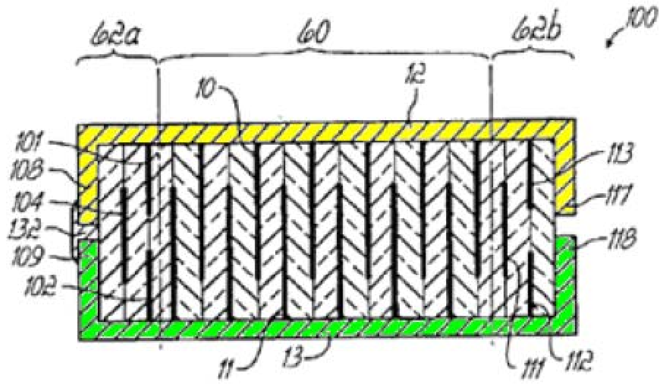


FIG. 19A

45. The "first conductive contact …" (12) is highlighted above in yellow. (The second contact (13) is highlighted in green and is addressed in paragraph 54 below regarding the construction of "a second conductive contact ….") As can be seen from these annotated figures, the "first conductive contact" 12 is a single conductive layer because it is shown in cross-section as having a uniform composition. This single conductive layer also meets all three requirements that: (i) it is physically and electrically attachable to an external conductor such as trace 14 of the printed circuit board shown in Figure 2A; (ii) it touches the dielectric body which is formed from the layers that separate internal plates 10; and (iii) it touches an internal plate 10 to establish an electrical connection. Additional support for my construction is provided below.

i. The contact is "a conductive layer"

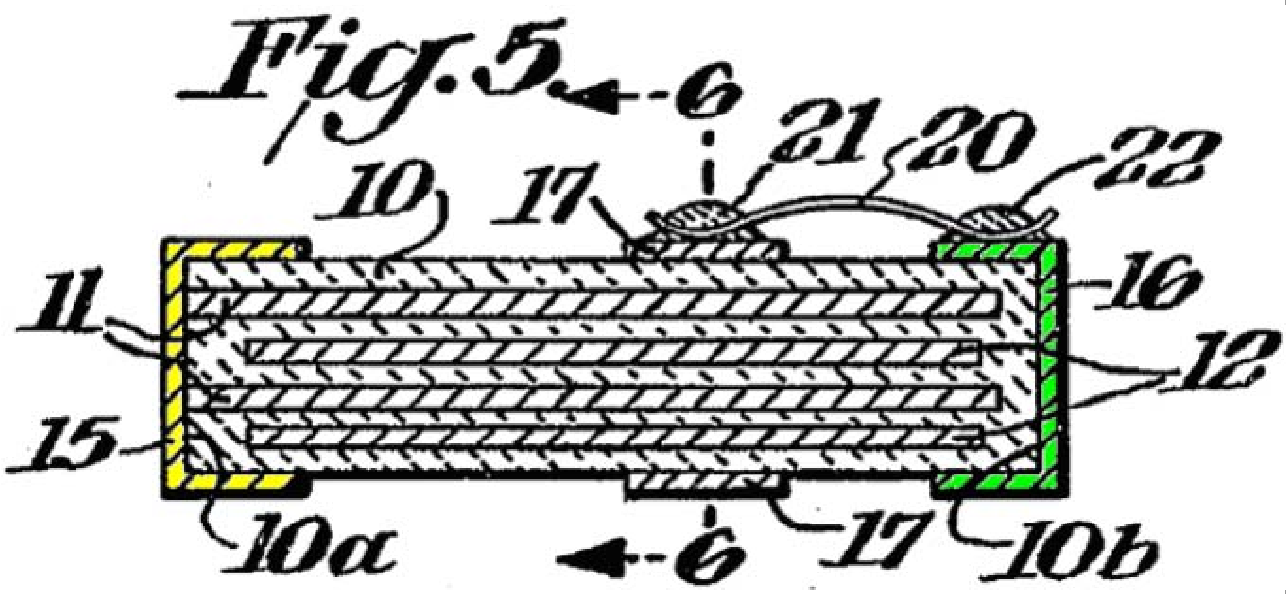
46. My construction that "a first conductive contact …" is "a conductive layer …" is also consistent with the patent rule set forth in Title 37, Section 1.84(h)(3) of the Code of Federal Regulations. I am informed by counsel that, according to this rule, a "cross section must be set out and drawn to show all of the materials as they are shown in the view from which the cross section was taken. The parts in cross section must show proper material(s) by hatching with regularly spaced parallel oblique strokes …."[9] In every instance in which a so-called "contact" is shown in

[9] 37 C.F.R. § 1.84(h)(3) ("A cross section must be set out and drawn to show all of the materials as they are shown in the view from which the cross section was taken. The parts in cross section must show proper material(s) by hatching with regularly spaced parallel oblique strokes, the space between strokes being chosen on the basis of the total area to be hatched. The various parts of a cross section of the same item should be hatched in the same manner and should accurately and graphically indicate the nature of the material(s) that is illustrated in cross section. The hatching of juxtaposed different elements must be angled in a different way. In the case of large areas, hatching may be confined to an edging drawn around the entire inside of the outline of the area to be hatched.

cross-section in the ‘356 Patent specification, that contact is always shown as having a uniform composition, i.e., single layer.

47. My construction that “a first conductive contact …” is “a conductive layer …” is also consistent with the only corresponding description in the ‘356 Patent specification that each contact (12, 13) is formed by “dipping” the device in a conductive material (2:13-16), since such a dipping process would result in the formation of a single conductive layer of that conductive material.

48. In addition, my construction that “a first conductive contact …” is “a conductive layer …” is consistent with the way similar structures are typically shown (with uniform hatching) and described by persons of ordinary skill in the art. For example, in the Coleman reference, U.S. Patent No. 4,193,106, issued March 11, 1980 and titled “Monolithic Ceramic Capacitor With Fuse Link” (Exhibit M), each of structures 15 and 16 in Figure 5 bears a striking resemblance to the “contact” described and claimed in the ‘356 Patent and is called a “conductive layer.” Similarly, it is described that the conductive layer is formed by “conventional dipping.”



49. Similarly, in the Insetta reference, U.S. Patent No. 4,856,102, issued August 8, 1989 and titled “Adjustable Multilayer Capacitor” (Exhibit N), each of structures 26 and 28 in Figure 3, which is shown in cross-section with uniform hatching, is called a “conductive layer.”

Different types of hatching should have different conventional meanings as regards the nature of a

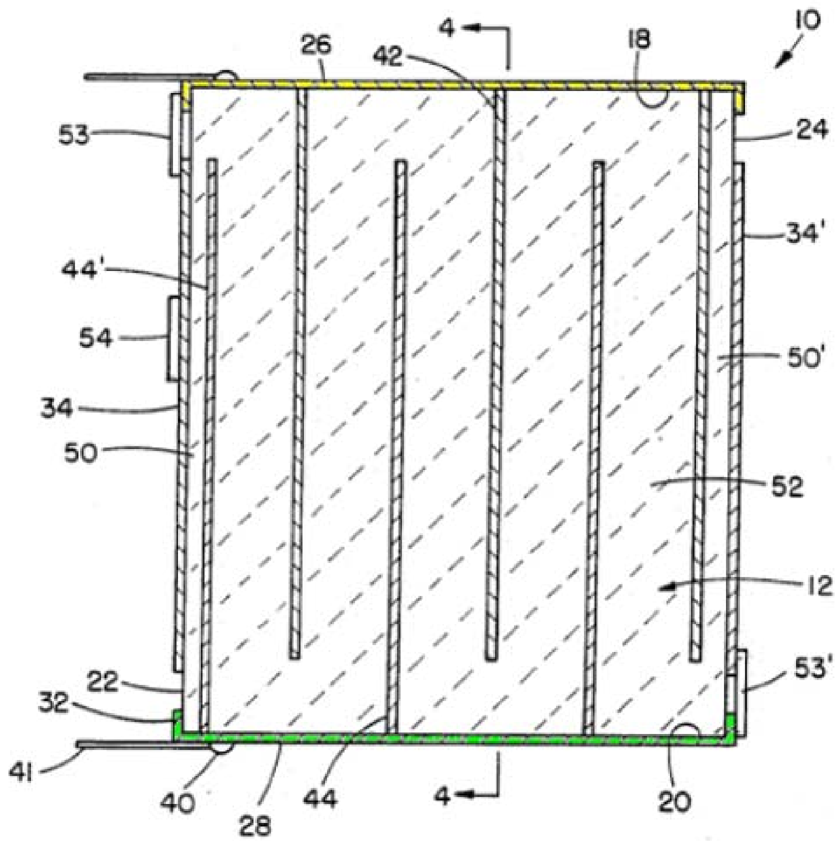


FIG. 3

ii. The contact must be "for attaching … to an external conductor"

50. My construction that "a first conductive contact …" must also be "attachable to an external conductor" is consistent with the specification of the '356 Patent which provides:

> The device is then dipped in conductive material to form end terminations for the internal conductive structures, **suitable for soldering to a surface mount circuit board or gluing and wire bonding to a hybrid circuit**. (2:13-16) (emphasis added)
>
> In addition, the wideband capacitor of the present invention is smaller and easier to handle and mount on a circuit board than combinations of discrete capacitors. (4:38-40)
>
> Further, in use, one of the metallized **contact areas 12, 13 is attached to a conductor extending over a major planar surface of a printed circuit board**. (10:39-42) (emphasis added)

material seen in cross section.")

iii. The contact must be "present on … [the] dielectric body"

51. My construction that the contact must be "present on" -- i.e., touching the dielectric body is consistent with the plain language of the claim, its ordinary meaning, and its usage in the '356 Patent specification. Additionally, I am informed by counsel that the Court of Appeals for the Federal Circuit has stated that ''the phrase 'mounted on' is repeatedly used interchangeably with the term 'on,' which in context clearly denotes a form of attachment, not simply an electrical connection.'' *Asyst Technologies, Inc. v. Emtrak, Inc.*, 402 F.3d 1188, 1194 (Fed. Cir. 2005). That court has also stated that "on" means "in physical contact with." *Senmed, Inc. v. Richard-Allan Medical Industries, Inc.*, 888 F.2d 815 (Fed. Cir. 1989). My construction is consistent with these constructions of similar phrases.

iv. The contact must be "touching the conductive first plate"

52. My construction that "a first conductive contact …" must be "touching the conductive first plate" is consistent with the figures and specification of the '356 Patent which provide:

> The **conductive material 12 and 13 at each end forms a common connection point for each plate extending to that side.** Plates 10 extend in pairs, each including an upper plate 10 and a lower plate 10' from the left side, and plates 11 extend similarly in pairs, each including an upper plate 11 and a lower plate 11' from the right side, forming parallel plate capacitors between each set of adjacent plates 10 and 11' and 10' and 11. … In other embodiments, plates extend individually from opposite sides …. (2:21-32) (emphasis added)
>
> a multi-layer structure … including **plates 10 and 11 extending from conductive contacts 12 and 13**, respectively, on opposite sides of a ceramic dielectric body. In this embodiment, individual plates extend from each side contact, rather than pairs of plates as shown in FIG. 2A. (6:22-28) (emphasis added)
>
> Overlapping **conductive plates 10, 11 are connected to external conductive contacts 12, 13, respectively**. (9:46-47) (emphasis added)
>
> As shown in Figure 17A, the broadband capacitor 87 includes a low frequency, higher value bulk capacitor section 60 comprised of **a first plurality of conductive plates 10 connected to an external contact 12 and a second plurality of opposed parallel plates 11 connected to the external contact 13**. (10:29-34) (emphasis added)[10]

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[10] The '356 Patent specification further states:

> Referring to Figures 18A and 18B, another example of an integrated capacitor array is represented by the broadband capacitor 96. The low frequency

b. Presidio's Construction

53. Presidio has proposed that the phrase **"a conductive first contact disposed externally on the dielectric body and electrically connected to the first plate"** be construed as "a conductive material arranged on an external surface portion of the substantially monolithic dielectric body having an electrical connection with the first plate." I disagree with Presidio's proposed construction of this phrase because it is contrary to the specification of the '356 Patent, including the way the term "contact" is used consistently throughout. Presidio's proposed construction is also contrary to the understanding of one of ordinary skill in the art. It would also render the claims invalid under 35 U.S.C. § 112(1) since it would encompass capacitor structures that are not sufficiently described or enabled by the '356 Patent specification. Presidio's proposed construction would cause this claim element to read on plates 72 and 74 in Figure 10A and pads 121-124 in Figures 14 and 15A of the '356 Patent, despite the fact that the '356 Patent specification always distinguishes these layers, which are called external "plates" and "pads," from the "contacts" which are labeled 12 and 13.[11] In every embodiment and figure, the "contacts" physically touch the internal plates 10 and 11. The "electrical connection," as proposed by Presidio is too broad since it

> capacitance section 60 and high frequency capacitance section 62b of Figures 18A and 18B are substantially identical in construction to the low frequency capacitor section 60 and high frequency capacitor section 62b previously described with respect to Figures 17A, 17B. (10:56-66)
>
> Referring to FIGS. 19A and 19B, a further example of an integrated capacitor array is represented by the broadband capacitor 100. The low frequency capacitance section 60 is substantially the same as in other embodiments; (11:8-11)

[11] The '356 Patent specification states:

> two additional internal plates 66 and 68 which extend from the **end contacts 13 and 12**, respectively. These internal plates are connected by vias 70 to **external conductive plates 72 and 74**, respectively, which are printed on the exterior of the ceramic dielectric body 65. (6:38-43) (emphasis added)
>
> **external conductive plates 141 and 142 are connected to the external conductive contacts 12, 13**, respectively. An external floating conductive plate 143 is placed between the ends of the conductive plates 141, 142 and is not connected to either of the contacts 12, 13. (9:5-10) (emphasis added)
>
> Similarly, **conductive pads 123, 124** also extend over respective upper and lower surfaces of the capacitor 120 **are connected to the contact 13**. (9:50-52) (emphasis added)

may be accomplished by a wire or a via and is contrary to the specification. My construction requiring physical touching between "contacts" and internal plates is preferred since it is consistent with the specification. Presidio's proposed construction also ignores the fact that, in every embodiment, each "contact" 12 and 13 is a conductive layer that is attachable to an external conductor. Presidio's proposed construction is also inconsistent with and not sufficiently described or enabled by the '356 Patent specification to the extent Presidio contends that the term "material" means something other than a layer formed from a single, particular substance of uniform composition.[12]

5. "A Conductive Second Contact …"

a. ATC's Construction

54. It is my opinion that **"a conductive second contact disposed externally on the dielectric body and electrically connected to the second plate"** should be construed to mean a conductive layer for attaching the capacitor (recited in the preamble of claim 1) to another external conductor, the conductive layer being present on an electrically separate external surface portion of the substantially monolithic dielectric body and touching the conductive second plate to establish electrical connection. My construction is consistent with the specification of the '356 Patent, the patent rule set forth in Title 37, Section 1.84(h)(3) of the Code of Federal Regulations regarding cross-sectional figures, the knowledge of one of ordinary skill in the art, and the constructions of similar phrases adopted by the courts. In support of my construction of "a conductive second

[12] The '356 Patent specification states:

> **The conductive material 12 and 13** at each end forms a common connection point for each plate extending to that side. Plates 10 extend in pairs, each including an upper plate 10 and a lower plate 10' from the left side, and plates 11 extend similarly in pairs, each including an upper plate 11 and a lower plate 11' from the right side, forming parallel plate capacitors between each set of adjacent plates 10 and 11' and 10' and 11. (2:21-28) (emphasis added)
>
> A further potential variable to adjust, is the type of ceramic used. Indeed, different layers in the ceramic structure may be made of ceramic **materials having different molecular structures**. Different ceramic **materials may exhibit different performance in various attributes**, such as relative dielectric constant, polarization, breakdown field strength, curing behavior, mechanical strength and mechanical stress and strain behavior. (12:39-46) (emphasis added)

contact …," I rely on the discussion and citations included above in paragraphs 43-52 in connection with "a conductive first contact …."

b. Presidio's Construction

55. Presidio has proposed that the phrase **"a conductive second contact disposed externally on the dielectric body and electrically connected to the second plate"** be construed as "a conductive material arranged on an external surface portion of the substantially monolithic dielectric body having an electrical connection with the second plate." I disagree with Presidio's proposed construction of this phrase because it is contrary to the specification of the '356 Patent and to the understanding of one of ordinary skill in the art, and because it would render the claims invalid under 35 U.S.C. § 112(1) since it would encompass capacitor structures that are not sufficiently described or enabled by the '356 Patent specification. (*See* my discussion regarding Presidio's proposed construction of "a conductive first contact …." in paragraph 53.) Presidio's proposed construction of "a conductive second contact …" is also indefinite since it allows the conductive first and second contacts to be located on the same portion of the dielectric body. If the first and second contacts are not located on electrically separate portions of the dielectric body, the device is not a capacitor because it would not be possible for them to accumulate charges of different polarities, i.e., positive and negative charges.

6. "The Second Contact Being Located Sufficiently Close … To Form A First Fringe-Effect Capacitance With The First Contact"

a. Indefiniteness

56. It is my opinion that **"the second contact being located sufficiently close to the first contact to form a first fringe-effect capacitance with the first contact"** is incapable of construction because it is indefinite.[13] This claim element is indefinite because it creates a zone of uncertainty as to the scope of the claim (e.g., How close is sufficiently close?; How large or small is the fringe-effect capacitance?). The '356 Patent fails to disclose a standard against which one of ordinary skill in the art could determine what is being claimed. This phrase is also indefinite

[13] It is also my opinion that the claims are invalid because "the second contact being located sufficiently close …" is not sufficiently described or enabled by the specification of the '356 Patent. Even if the '356 Patent could be said to disclose one or more species of multilayer

because the recitation of a first fringe-effect capacitance presupposes the presence of other fringe-effect capacitances, and the claim does not particularly point out and distinctly claim which of these multiple fringe-effect capacitances, if any, is captured by the claims.

57. Additionally, I am informed by counsel that in determining whether a claim is indefinite I can properly consider whether the patent expressly or clearly differentiates itself from the prior art. *Halliburton Energy Serv., Inc. v. M-I LLC*, 2007-1149, slip op. at 12 (Fed. Cir. 2008) ("We disagree that the evaluation of a claim's definiteness cannot include whether the patent expressly or at least clearly differentiates itself from the prior art"). It is my understanding that careful scrutiny should be applied when, as here, the patentee used functional language at the alleged point of novelty by stating what the invention does rather than what it is. The Court in *Halliburton* discussed "the dangers of using only functional claim limitations to distinguish the claimed invention from the prior art." *Halliburton* Opinion page 17. For example, consideration should be given to whether the patentee was in a position to use quantitative metrics to define the alleged invention instead of using such "conveniently" functional language. Here, Presidio could have, but chose not to, recite quantitatively in units of measurement how close the contacts would need to be in order to be "sufficiently close" as that phrase is used in the claims. Presidio also could have, but did not, define other parameters that affect fringe-effect capacitance, including the thicknesses and lengths of the contacts. Presidio's failure to clearly define the invention has unfairly left ATC and the general public to guess what difference, if any, exists between what is being claimed by Presidio as its alleged invention and what falls outside the scope of the claim as forming part of the prior art. *Halliburton* Opinion page 13 ("[Plaintiff's] failure to distinguish … the invention from the close prior art … is fatal."). Accordingly, it is my opinion that the claims are indefinite.

b. ATC's Alternative Construction

58. In the alternative, if the Court decides that **"the second contact being located sufficiently close to the first contact to form a first fringe-effect capacitance with the first contact"** should be construed, it is my opinion that this phrase should be construed to mean that an

capacitors having fringe-effect capacitance(s) between contacts, such disclosure would not

end of the first conductive contact and an end of the second conductive contact are positioned in an edge-to-edge relationship in such proximity as to form a determinable capacitance. My construction is consistent with the specification of the ‘356 Patent which provides:

> The conductive structures can further be opposed edges that are positioned to form a fringe-effect capacitance. (4:59-60)
>
> However, as shown in FIG. 18A, the metallized plates 12, 13 extend over an end of the capacitor 96 and have respective ends 97, 98 sufficiently close to each other so as to form a fringe-effect capacitance 99 therebetween as shown in FIG. 18B. (10:66-11:3)
>
> Further, as shown in FIG. 19A, the metallized plates 12, 13 extend over one end of the broadband capacitor 100 and have respective ends 108, 109 sufficiently close to each other so as to form a fringe-effect capacitance 110 therebetween as shown in FIG. 19B. (11:18-22)
>
> Further, as shown in FIG. 19A, the metallized plates 12, 13 also extend over an opposite end of the capacitor 100 and have respective ends 117, 118 sufficiently close to each other so as to form a fringe-effect capacitance 119 therebetween as shown in FIG. 19B. (11:31-35)
>
> [T]he independently adjustable parameters in forming a device in accordance with aspects of the invention include at least the following … the gap between plates … 97 and 98, 108 and 109, 117 and 118 … and the fringe capacitances created thereby …. (12:13-20)

59. My construction is also consistent with the following extrinsic evidence regarding fringe-effect capacitance, upon which I may rely:

> U.S. Pat. No. 6,661,638, issued December 9, 2003 (Exhibit O), 1:57-63 of the “Background of the Invention” section (there are “capacitor conductors on the same layer, but separat[ed] … laterally from one another. The gap that lies between the capacitor conductors serves as the dielectric material for the resulting capacitor. These capacitors are called 'edge capacitors' or 'fringe capacitors,' because the fringes of the capacitor conductors predominantly contribute to their capacitance.")
>
> U.S. Pat. No. 2,968,752, issued January 17, 1961 (Exhibit P), 2:71 to 3:3 ("Additional capacity is obtained from the “edge effects” of each such plate with adjacent plates on the same side of the dielectric, the edge effects being obtained by varying the spacing of coating areas which do not form pairs of opposed plates.")
>
> John M. Herbert, “Ceramic Dielectrics and Capacitors” Gordon and Breach, 1985, pp. 42-51, and pp.188-191, attached as Exhibit E.

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support or justify claims directed to the broader genus.

Charles S. Walker, “Capacitance, Inductance, and Crosstalk Analysis,” Artech House, 1990, pp. 48-67, attached as Exhibit F.

A.G. Lipchinski, “Linear capacitance of planar capacitor based on ferroelectric plate,” Radioelectron. and Commun. Systems (USA trans) Vol. 20, 124-7, 1977 (Exhibit Q).

A.G. Lipchinski, “Fringe capacitance and scattering field of a ferroelectric planar capacitor,” Radioelectron. and Commun. Systems (USA trans) Vol. 24, 74-6, 1981. (Exhibit R)

c. Presidio’s Construction

60. Presidio has proposed that the phrase **“the second contact being located sufficiently close to the first contact to form a first fringe-effect capacitance with the first contact”** be construed as “forming a capacitance between or proximate opposed ends of the first and second conductive contacts which affects the high frequency performance of the capacitor as a whole.” I disagree with Presidio’s proposed construction of this element because it is contrary to the specification of the ‘356 Patent, it impermissibly reads limitations from the specification of the ‘356 Patent into the claims, and it is contrary to the understanding of one of ordinary skill in the art. Presidio’s proposed construction is also indefinite.

61. Claim 1 as written only requires the formation of a fringe-effect <u>capacitance</u>. It does not recite any limitations or effect on the high-frequency <u>performance</u> of the capacitor. As described in the Background of the Relevant Technology section of my statement, fringe-effect capacitance is measured in Farads (F) and is a function of the spacing, thickness, and width of the conductors that are positioned in an edge-to-edge relationship. It also depends on the dielectric constant. Whether or not a given fringe-effect capacitance affects the high-frequency performance of the capacitor depends on, *inter alia*, the <u>reactance</u> of that fringe-effect capacitance (which is a function of the capacitance value and the frequency), the reactances of all the other capacitances within the capacitor, and the way the capacitor is connected to an external electrical circuit. To say the very least, it does not necessarily follow that the formation of a fringe-effect capacitance will have a measurable effect on the performance of the capacitor at high frequencies. Presidio does not teach in the specification how to estimate or measure the effect on high frequency performance of each separate fringe-effect capacitance isolated from interactions with other capacitances. In my opinion,

such an estimate is so complex that it could be conducted, if at all, by a Ph.D. scientist with specialized experience with Finite Element Analysis and there is no guarantee the analysis would provide a reliable result. This is certainly above the level of ordinary skill in the art and envisions, at the very least, an extensive experimentation.

62. In fact, the specification of the '356 Patent does not disclose any specific, definitive information about such effect on high frequency performance or how to measure it; suggesting that the "inventors" did not conduct such measurements. The specification of the '356 Patent confirms this state of affairs because it only states the fringe-effect capacitance may be relatively small compared to other capacitances in the device, that the gap between the contacts and the fringe effect capacitances created thereby are adjustable, and that the fringe effect capacitance <u>may</u> affect high frequency performance of the capacitor:

> [F]ringe capacitance … may be relatively small compared to the other parallel plate capacitances in the remainder of the … device. However, this capacitance may well affect the very high frequency performance of the device. (7:51-56)

> [T]he independently adjustable parameters in forming a device in accordance with aspects of the invention include at least the following … the gap between plates … 97 and 98, 108 and 109, 117 and 118 … and the fringe capacitances created thereby …. (12:13-30)

Such "may affect" references are no more than wishful thinking about a desired, but not presently measured and understood, property.

63. Moreover, based on my examination of other claims in the '356 Patent, it is clear that Presidio knew how to (and did) place frequency requirements within a claim, but chose not do so within the context of claim 1. For example, claim 28 of the '356 Patent reads as follows:

> 28. A capacitor comprising:
> a substantially monolithic dielectric body having a first external surface adapted to be positioned substantially parallel to a major surface of a circuit board; and
> **a lower frequency, higher value, first capacitor** formed by a first plurality of conductive plates disposed within the dielectric body and having respective major surfaces oriented substantially perpendicular to the first external surface, the first plurality of conductive plates forming a plurality of capacitors connected in parallel with each other; and
> **a higher frequency, lower value, second capacitor** formed by a second plurality of conductive plates disposed within the dielectric body and having respective major surfaces oriented substantially perpendicular to the first external

surface, the second plurality of conductive plates forming the second capacitor connected in parallel with the first capacitor.
(emphasis added)

64. I am informed by counsel that a proposed construction is indefinite if it does not inform the artisan of what is covered by the claim and what is not. For example, I am informed that in the *Halliburton* case, the Federal Circuit refused to adopt a construction that included the phrase "capable of" because "nothing in the record suggests what degree of such capability is sufficient." *Halliburton Energy Serv., Inc. v. M-I LLC*, 2007-1149, slip op. at 15 (Fed. Cir. 2008). It is also my understanding that a proposed construction is likely to be indefinite when it "requires an artisan to make a separate infringement determination for every set of circumstances in which the composition may be used, and when such determinations are likely to result in differing outcomes (sometimes infringing and sometimes not)." *Halliburton* Opinion page 17. Accordingly, it is my opinion that Presidio's proposed construction is indefinite since the phrase "affects high frequency performance" does not particularly point out and distinctly claim what is considered to be "high frequency." It also does not specify what type or magnitude of effect on high-frequency performance is required by the claim. Presidio's proposed construction is also indefinite since determining whether a fringe-effect capacitance would affect high frequency performance changes and is dependent on external factors such as how an end-user connects the capacitor to an external circuit and the configuration of that circuit (e.g., gap width of the micro-strip line on a printed circuit board). In fact, Presidio's own website acknowledges that "[g]ap dimension, substrate material and micro-strip line width impact circuit performance" and that customers should "[c]onsult [Presidio's] factory for application specific recommendations." (Exhibit S, "Recommended Mounting Methods," http://www.presidiocomponents.com/products/index.htm). The specification of the '356 Patent does not supply these crucial details. This, in my view, makes Presidio's construction indefinite.

B. CLAIM 3

65. Claim 3 of the '356 Patent claims:

3. The capacitor of claim 1 wherein the first fringe-effect capacitance is disposed on a first side of the dielectric body and the first contact and the second contact are further

disposed on a second side of the dielectric body, and the second contact being located sufficiently close to the first contact on the second side of the dielectric body to form a second fringe-effect capacitance with the first contact.

The following is my opinion as to the proper construction of the terms from claim 3:

1. Indefiniteness of "The First Fringe-Effect Capacitance Is Disposed …"

66. It is my opinion that **"the first fringe-effect capacitance is disposed on a first side of the dielectric body"** is indefinite under 35 U.S.C. § 112(2) and is not capable of construction because fringe-effect capacitance is created by fringe electric fields that exist between conductors of opposite polarities. This fringe-effect capacitance is not a physical structure capable of being "disposed on a first side of the dielectric body" as set forth in the claim.

Presidio has not proposed a construction for this phrase.

2. "The Second Contact Being Located Sufficiently Close … On The Second Side Of the Dielectric Body…"

a. Indefiniteness

67. It is my opinion that the phrase **"the second contact being located sufficiently close to the first contact on the second side of the dielectric body to form a second fringe-effect capacitance with the first contact"** is not capable of construction because it is indefinite (e.g., what spacing parameters are necessary?) under 35 U.S.C. § 112(2), and not sufficiently described or enabled by the specification as required by 35 U.S.C. § 112(1), for the same reasons set forth in paragraphs 56 and 57 in connection with the element "the second contact being located sufficiently close …" in claim 1.

b. ATC's Alternative Construction

68. In the alternative, if the Court decides that construction of **"the second contact being located sufficiently close to the first contact on the second side of the dielectric body to form a second fringe-effect capacitance with the first contact"** is appropriate, it is my opinion that this phrase should be construed to mean another end of the first conductive contact and another end of the second conductive contact are present on the second side of the substantially (?) monolithic dielectric body and are positioned in an edge-to-edge relationship in such proximity as to form a determinable capacitance. In support of my construction, I rely on the discussion and

citations to the specification of the ‘356 Patent and the extrinsic evidence regarding fringe-effect capacitance provided above in connection with “the second contact being located sufficiently close …” of claim 1.

c. Presidio’s Construction

69. Presidio has proposed that the element **“the second contact being located sufficiently close to the first contact on the second side of the dielectric body to form a second fringe-effect capacitance with the first contact”** be construed as “forming a capacitance between or proximate opposed ends of the first and second conductive contacts on a second side of the substantially monolithic dielectric body which affects the high frequency performance of the capacitor as a whole.” I disagree with Presidio’s proposed construction of this term because it is indefinite, it is contrary to the specification of the ‘356 Patent, it impermissibly reads limitations from the specification of the ‘356 Patent into the claims, and it is contrary to the understanding of one of ordinary skill in the art. I disagree with Presidio’s proposed construction for the same reasons stated in the discussion regarding Presidio’s proposed construction of “the second contact being located sufficiently close …” in claim 1 (paragraphs 61-64).

C. CLAIM 18

70. Claim 18 of the ‘356 Patent claims:

18. The capacitor of claim 1 wherein the ceramic body comprises a plurality of ceramic tape layers laminated together in a green ceramic state and fired to form a cured monolithic ceramic structure.

1. Indefiniteness of “A Cured Monolithic Ceramic Structure” and “The Ceramic Body”

71. It is my opinion that **“a cured monolithic ceramic structure”** is indefinite under 35 U.S.C. § 112(2) and is not capable of construction because its meaning is unintelligible within the context of the “substantially monolithic dielectric body” of claim 1.

72. It is also my opinion that **“the ceramic body”** of claim 1 is indefinite because it lacks antecedent basis.

Presidio has not proposed a construction for these phrases.

D. CLAIM 19

73. Claim 19 of the '356 Patent claims:

19. The capacitor of claim 1 wherein the dielectric body has a hexahedron shape, the first and second external conductive contacts being positioned on opposed end surfaces of the hexahedron shape.

1. "The Dielectric Body Has A Hexahedron Shape"

a. Indefiniteness

74. It is my opinion that **"the dielectric body has a hexahedron shape"** is indefinite, since a "hexahedron" does not define any particular shape. Rather, it only characterizes the number of sides, i.e., 6. This is consistent with the following, technical dictionary definitions of the term "hexahedron," which provide:

> Hexahedron … A polyhedron with six faces (McGraw-Hill Dictionary of Scientific and Technical Terms, Fifth Edition, 1993, p. 932) (Exhibit T)

> A hexahedron is a polyhedron with six faces.
> (Weisstein, Eric W. "Hexahedron." From MathWorld--A Wolfram Web Resource. http://mathworld.wolfram.com/Hexahedron.html) (Exhibit U)

b. ATC's Alternative Construction

75. In the alternative, it is my opinion that **"the dielectric body has a hexahedron shape"** should be construed to mean the substantially monolithic dielectric body has six sides. My construction is consistent with all of the figures of the '356 Patent showing multilayer capacitors (in cross-sectional views) which have exactly 6 sides. In fact, the specification of the '356 Patent, does not provide any guidance since it uses a similar phase "hexahedral shape" without explanation:

> In the disclosed embodiments, the capacitor has a substantially monolithic dielectric body formed from a plurality of ceramic tape layers laminated together in a green ceramic state and fired to form a sintered or fused monolithic ceramic structure. However, other dielectric materials and assembly methods may be used. Further, in the disclosed embodiments the dielectric body has a **hexahedral shape**, with electrical contacts positioned on opposed end surfaces. However, other shapes may also be used. (4:61 to 5:2) (emphasis added)

c. Presidio's Construction

76. Presidio has proposed that the phrase **"the dielectric body has a hexahedron shape"** be construed as "the dielectric body has six major surfaces." I disagree with Presidio's

proposed construction of this term because it is indefinite (e.g., What is a "major" surface?), it is contrary to the specification of the '356 Patent, and it is contrary to the understanding of one of ordinary skill in the art since it could be applied to dielectric bodies with more than six surfaces.

77. In addition to the claim elements already defined, the other elements of the asserted claims should be construed according to their plain and ordinary meaning to one of ordinary skill in the art. I may offer expert testimony about the plain and ordinary meaning of the other elements of the asserted claims. I may rely upon extrinsic evidence such as treatises, dictionaries, publications, patents, etc.

Signed under the penalties of perjury this 15th day of February 2008.

Dr. Joseph P. Dougherty